

CofC

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re U.S. Patent No. 6,936,262

) Serial No. 10/055,174

Inventor(s): BRIGGS and TATUM

) Filed: January 25, 2002

Issue Date: August 30, 2005

) Attorney Docket No. 000295.00014

For: LKTA DELETION MUTANT OF *P. HAEMOLYTICA*

**REQUEST FOR CERTIFICATE OF CORRECTION**

U.S. Patent and Trademark Office  
Customer Service Window  
Randolph Building, Mail Stop: Certificate of Correction Branch  
401 Dulany Street  
Alexandria, VA 22314

**Certificate**  
**MAR 21 2006**  
**of Correction**

Sir:

Please issue a Certificate of Correction in the above-identified patent. Two (2) copies of PTO Form 1050 are appended. The complete Certificate of Correction involves one page.

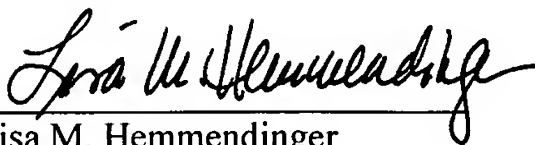
Relevant portions of (1) the Examiner's Amendment sent with the Supplemental Notice of Allowance dated January 24, 2005 and the (2) initialed Information Disclosure Statement returned with the Office Action dated May 12, 2003. These documents indicate that the errors in the issued patent were not the patentees' fault. Thus we believe no fee is due. If this is incorrect, please charge our Deposit Account No. 19-0733.

Respectfully submitted,

BANNER & WITCOFF, LTD.

Dated: March 17, 2006

1001 G Street, N.W. (11th Fl.)  
Washington, D.C. 20001  
(202) 824-3000

By:   
Lisa M. Hemmendinger  
Registration No. 42,653

MAR 21 2006

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO.: 6,936,262  
DATED: August 30, 2005  
INVENTOR(S): BRIGGS and TATUM

It is certified that errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

On the cover page, References Cited section (56), Other Publications:  
In the twelfth reference, please replace "*al R*," with --*alcR*--.

In Column 23, Claim 10, Line 67:  
Please replace "an" with --and--.

Mailing Address of Sender:

Banner & Witcoff, Ltd.  
11th Floor  
1001 G Street, N.W.  
Washington, DC 20001-4597

FORM PTO 1050 (Rev.2-93)

U.S. PAT. NO 6,936,262

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2005 2 4

UNITED STATES PATENT AND TRADEMARK OFFICE  
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/055,174	01/25/2002	Robert E. Briggs	000295.00014	9144

22907 7590 01/24/2005

BANNER & WITCOFF  
1001 G STREET N W  
SUITE 1100  
WASHINGTON, DC 20001

EXAMINER

GRASER, JENNIFER E

ART UNIT PAPER NUMBER

1645

DATE MAILED: 01/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

000295.00014  
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JAN 27 2005 BA

BANNER & WITCOFF, LTD EVD

# SUPPLEMENTAL

## Notice of Allowability

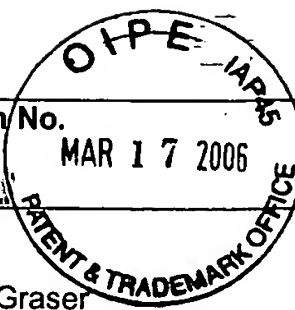
Application No.

10/055,174

Examiner

Jennifer E. Graser

MAR 17 2006



Applicant(s)

BRIGGS ET AL.

Art Unit

1645

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to \_\_\_\_\_.
2. ☒ The allowed claim(s) is/are 36-41, 66, 81-88, 91, 92 and 95-101.
3. ☒ The drawings filed on 25 January 2002 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
  1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

### Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

Jennifer E. Graser  
Primary Examiner  
Art Unit: 1645  
11/14/05

MAR 21 2006

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Lisa Hemmindinger on January 10, 2004. This Supplemental amendment is merely to correct typographical errors found in the Examiner's Amendment mailed on 12/21/04.

Claims 36-41, 66, 81-88, 91, 92, and 95-101 are allowed.

The application has been amended as follows:

Please substitute/amend claims 81, 91 and 95 with the following claims:

~~81~~ (presently amended) A method of inducing immunity to pneumonic pasteurellosis in ruminants, comprising administering a vaccine formulation which comprises:

- (a) a killed *P.haemolytica* bacterium which contains no non-*P.haemolytica* DNA and which expressed a deletion mutant leukotoxin when it was alive; and
- (b) a *P.haemolytica* deletion mutant leukotoxin in the form of a purified protein or in a preparation selected from the group consisting of a bacterial lysate, a bacterial extract, and a culture supernatant;

wherein the deletion leukotoxin molecules of (a) and (b) have a molecular weight of about 66 kDa, lack amino acid residues 34 to 378 of the wild-type leukotoxin molecule,

4.1 2006

Art Unit: 1645

and induce antibodies which specifically bind to and neutralize biologically active leukotoxin.

91. (presently amended) A feed for ruminants which comprises:

(a) a killed *P.haemolytica* bacterium which contains no non-*P.haemolytica* DNA and which expressed a deletion mutant leukotoxin when it was alive; and

(b) a *P.haemolytica* deletion mutant leukotoxin in the form of a purified protein or in a preparation selected from the group consisting of a bacterial lysate, a bacterial extract, and a culture supernatant;

wherein the deletion leukotoxin molecules of (a) and (b) have a molecular weight of about 66 kDa, lack amino acid residues 34 to 378 of the wild-type leukotoxin molecule, and induce antibodies which specifically bind to and neutralize biologically active leukotoxin.

95. (presently amended) A vaccine for reducing morbidity in ruminants, comprising:

(a) a killed *P.haemolytica* bacterium which contains no non-*P.haemolytica* DNA and which expressed a deletion mutant leukotoxin when it was alive; and

(b) a *P.haemolytica* deletion mutant leukotoxin in the form of a purified protein or in a preparation selected from the group consisting of a bacterial lysate, a bacterial extract, and a culture supernatant;

wherein the deletion leukotoxin molecules of (a) and (b) have a molecular weight of about 66 kDa, lack amino acid residues 34 to 378 of the wild-type leukotoxin molecule,



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/053,174	01/25/2002	Robert E. Briggs	000295.00014	9144

22907 7590 05/12/2003

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WASHINGTON, DC 20001

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BANNER WITCOFF

EXAMINER

GRASER, JENNIFER E

ART UNIT

PAPER NUMBER

1645

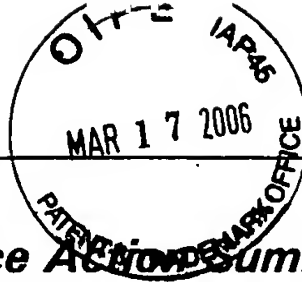
DATE MAILED: 05/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

000295.00014  
DOCKETED *SH*  
MAY 15 2003  
*Amend due: 8.12.0.*  
*Last day: 11.12.0.*



**Office Action Summary**



Application No.

10/055,174

Applicant(s)

Btiggs et al.

Examiner

Jennifer Graser

Art Unit

1645



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on Election, 4/21/03
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 36-41 and 66-95 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 36-41 and 66-95 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119**

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some\* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

**Attachment(s)**

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4
- 18) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: \_\_\_\_\_

2006

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Sheet of

PTO-1449 (Modified)

MAR 17 2006

ATTY. DOCKET NO.  
000295.00014SERIAL NUMBER Div. of  
09/245,331U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICEAPPLICANT  
Briggs and TatumINFORMATION DISCLOSURE STATEMENT  
BY APPLICANT

FILING DATE

Herewith

GROUP ART UNIT (Prior)  
1645J0079 U.S. PTO  
10/055174

## U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE

## FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION YES/NO

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

7	Homchampa et al. "Cross protective immunity conferred by a marker-free <i>aro A</i> mutant of <i>Pasteurella multocida</i> " Vaccine 1997 Vol. 15, Number 2
	Beaumont et al. "Identification and Characterization of <i>alcR</i> , a Gene Encoding an AraC-Like Regulator of Alcaligin Siderophore Biosynthesis and Transport in <i>Bordetella pertussis</i> and <i>Bordetella bronchiseptica</i> " Journal of Bacteriology, February 1998, pages 862-870, Vol. 180, No. 4
	Link et al. "Methods for Generating Precise Deletions and Insertions in the Genome of Wild-Type <i>Escherichia coli</i> : Application to Open Reading Frame Characterization" Journal of Bacteriology, October 1997, pgs. 628-6237, Vol. 179, No. 20
	Cotter and Miller "BvgAS-Mediated Signal Transduction: Analysis of Phase-Locked Regulatory Mutants of <i>Bordetella bronchiseptica</i> in a Rabbit Model" Infection and Immunity August 1994, pgs. 3381-3390, Vol 62, No. 8
✓	Hamilton et al. "New Method for Generating Deletions and Gene Replacements in <i>Escherichia coli</i> " Journal of Bacteriology, September 1989, pgs 4617-4622, Vol 171, No. 9

EXAMINER

DATE CONSIDERED

EXAMINER: Initial citation if reference was considered. Draw line through citation if not in conformance to MPEP 609 and not considered. Include copy of this form with next communication to applicant.

MAR 21 2006